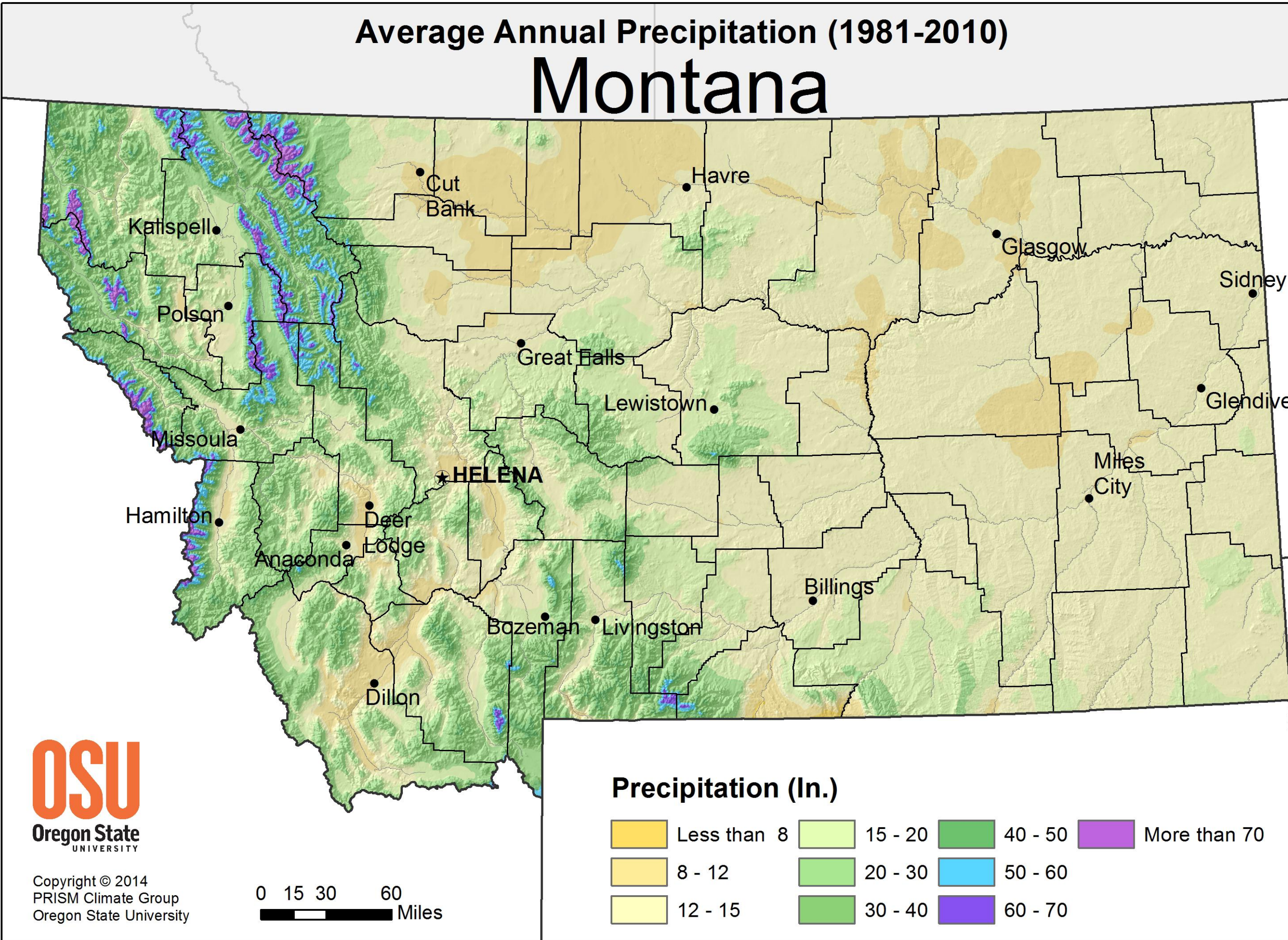


Winter storm hazards present one of the greatest threats to life of any hazard in Montana. Winter storms are considered to be deceptive killers because most deaths are indirectly related to the storm. People die in traffic accidents on snow- or ice-covered roads, from hypothermia due to prolonged exposure to cold, and from heart attacks due to overexertion.

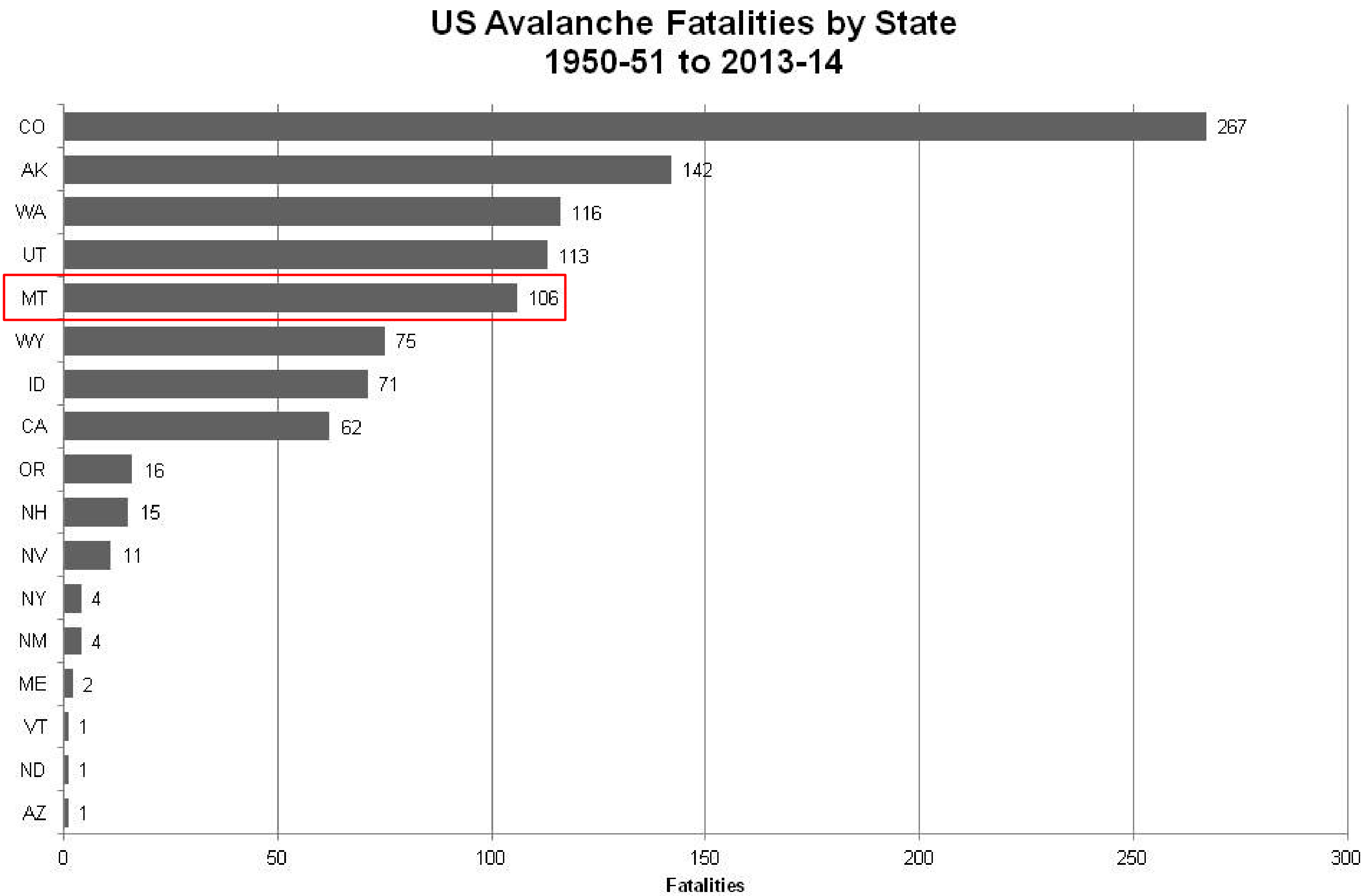
About 70 percent of the winter storm-related deaths in the U.S. occur from people leaving motor vehicles and nearly 25 percent are from exposure to snow and cold during outdoor activities.



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BUILDING MONTANA'S DISASTER RESILIENCE TOGETHER

Severe Winter Weather



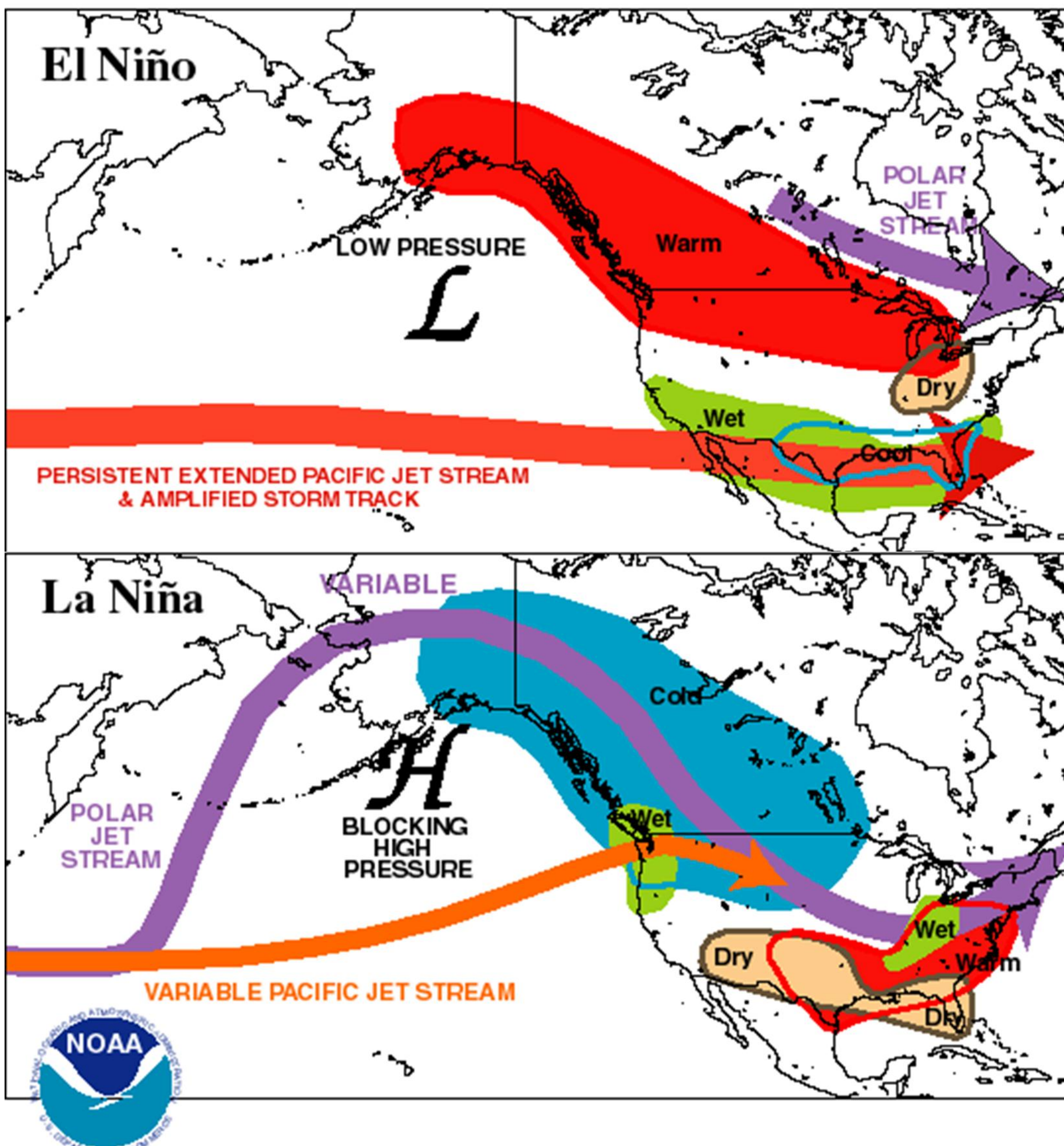
Avalanches are also common hazards in Montana for those recreating outside during the winter months. An avalanche is a mass of loosened snow, ice, and/or earth suddenly and swiftly sliding down a mountain. Avalanches occur throughout the mountains of Montana and, to a limited extent, elsewhere in the state. Avalanche hazards most-directly threaten winter recreationists, homes and businesses in mountainous regions, and communication and transportation networks. Two of Montana's ski areas, Bridger Bowl and Big Sky, are respectively the second and fourth most avalanche-prone ski resorts in the entire U.S.

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TYPICAL JANUARY-MARCH WEATHER ANOMALIES AND ATMOSPHERIC CIRCULATION DURING MODERATE TO STRONG EL NIÑO & LA NIÑA



Climate Prediction Center/NCEP/NWS

Typically, during a La Niña winter, Montana has better chances for cooler and wetter weather while El Niño winters can bring warmer and drier weather. However, while average temperatures are typically warmer in an El Niño event, there can still be periods of very cold temperatures and heavy snow.

The weather patterns that contribute to the greatest likelihood of wintertime blizzards to occur with two scenarios.

- 1) Low pressure areas may move rapidly southeastward along the eastern slope of the Rockies followed by a major outbreak of Arctic air. The combined effects also resulted in significant up-sloping low level winds, producing potentially heavy snow in the upslope areas.
- 2) Another scenario is a slow moving deep low pressure center just east of the state that pulls cold polar air from the north. The onset of many winter storms are not necessarily revealed on upper level weather charts as major low pressure troughs over or near Montana as is common over the eastern half of the US.

Missoula Avalanche

February 28, 2014

1 Fatality

Snowboarders skiing illegally on the west side of Mount Jumbo triggered an avalanche which demolished a two-story home in the lower Rattlesnake Valley. The avalanche buried three people alive. After several hours all three people were found alive. First extracted was an 8-year-old boy who was playing outside the southeast corner of the home. An elderly man was found an hour later. The chimney had fallen near him, which created an air pocket enabling him to breath under a thick snow pack. An hour after he was found, a woman was found inside the ruins of the house. She too was alive, having a pocket of air. Unfortunately, she passed away in the hospital due to her duration in the snow.



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Advisories: Be Aware

- Winter Weather Advisory:** Any or combination of snow, blowing snow, sleet/freezing rain <1/4 inch that will cause minor to moderate societal impacts
- Wind Chill Advisory:** Wind chill temps between -20F and -40F, *and* wind speed ≥ 10 mph
- Freezing Rain Advisory:** Freezing rain or drizzle accumulation ≤¼ inch with no combination of other winter warning conditions

Watches: Be Prepared

- Blizzard/Winter Storm/Wind Chill Watch:** Conditions are favorable for a blizzard, winter storm or dangerously low wind chill values

Warnings: Take Action!

- Blizzard Warning:** Wind (sustained or frequent gusts) ≥ 35 mph, *and* visibility ≤ 1/4 mile, *and* conditions occurring for ≥ 3 hrs during the storm’s duration (doesn’t have to be consecutive hours)
- Winter Storm Warning:** Hazardous winter weather conditions including heavy snow and/or blowing snow, significant accumulations of freezing rain or sleet, *and/or* significant societal impacts
- Ice Storm Warning:** Freezing rain or drizzle accumulation ≥ ¼ inch or more during an event’s duration with no combination of other winter warning conditions
- Wind Chill Warning:** Wind chill temps ≤ -40F, *and* wind speed ≥ 10 mph

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Severe Winter Weather

Prepare! Don't Let a Winter Storm Take You by Surprise

Before the storm strikes, make sure your home, office and vehicles have the supplies you might need. Make sure farm animals and pets also have the essentials they will need.

At Home and Work

Primary concerns are loss of heat, power and telephone service and a shortage of supplies if storm conditions continue for more than a day.

Have a Emergency Preparedness Kit:

- ✓ Flashlight and extra batteries
- ✓ Battery-powered NOAA Weather Radio and portable radio to receive emergency information
- ✓ Extra food and water (1 gallon/person/day for 3 days): such as dried fruit, nuts and granola bars, and other food requiring no cooking or refrigeration
- ✓ Extra prescription medicine
- ✓ Baby items such as diapers and formula
- ✓ First-aid supplies
- ✓ Emergency heat source: extra clothing and blankets, fireplace, wood stove, space heater - properly ventilated to prevent a fire or carbon monoxide poisoning
- ✓ Fire extinguisher

On the Farm, Pet Owners

- ✓ Make sure pets have plenty of food, water and shelter
- ✓ Move animals to sheltered areas or bring pets inside - haul extra feed to nearby feeding areas
- ✓ Have water available – most animals die from dehydration in winter storms

In Vehicles

Plan your travel and check the latest weather reports to avoid the storm! Fully check and winterize your vehicle before the winter season begins.

Carry a Winter Storm Survival Kit:

- ✓ Mobile phone, charger, batteries
- ✓ Shovel, windshield ice scraper and brush
- ✓ Blankets/sleeping bags
- ✓ Flashlight with extra batteries
- ✓ First aid kit
- ✓ Knife
- ✓ High-calorie, non-perishable food
- ✓ Extra clothing to keep dry
- ✓ Gallon of water
- ✓ Sack of sand or cat litter for traction
- ✓ Tool kit
- ✓ Tow rope
- ✓ Battery booster/jumper cables
- ✓ Candle and matches
- ✓ Compass and road maps (don't depend on mobile devices)
- ✓ Keep your gas tank near full to avoid ice in the tank and fuel lines
- ✓ Avoid traveling alone – let someone know your timetable and primary and alternate routes

Highway 191 Near Malta, December 28, 2003. The highway was closed for several days following the record snowfalls in northeastern Montana. Many drivers were stranded during the storm that created this snow drift.



OUTSIDE

IF YOU ARE CAUGHT IN A WINTER STORM

Find Shelter: Try to stay dry. Cover all exposed areas of skin.

If No Shelter: Build a lean-to, windbreak or snow cave for protection from the wind. Build a fire for heat and to attract attention. Place rocks around the fire to absorb and reflect heat.

Stay Hydrated: Melt snow for drinking water. Avoid eating snow. Eating snow will lower your body temperature.

IN A VEHICLE

Stay In Vehicle: You will become quickly disoriented in wind-driven snow and cold. Run the motor about 10 minutes each hour for heat. Open the window a little for fresh air to avoid carbon monoxide poisoning. Make sure the exhaust pipe is not blocked.

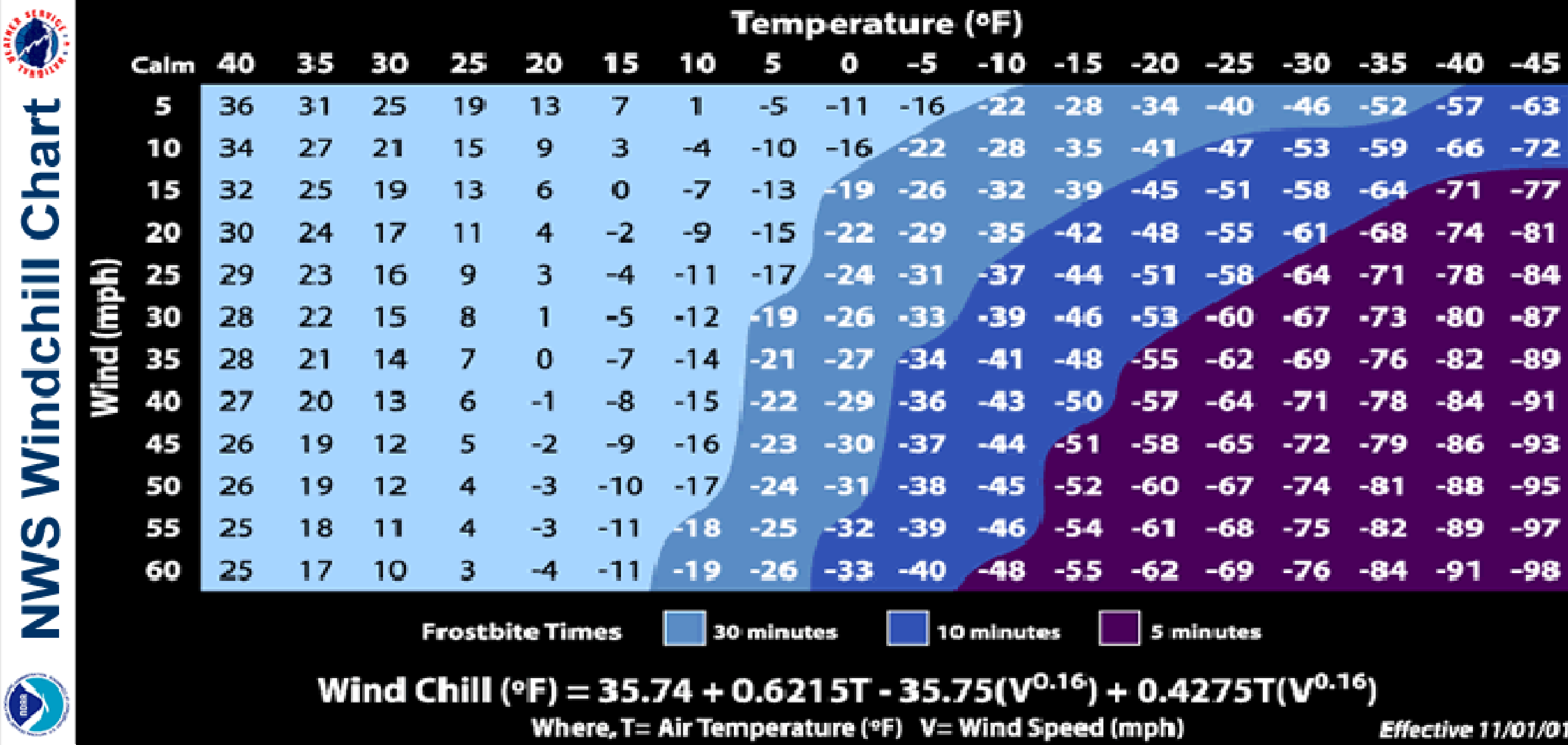
Be Visible To Rescuers: Turn on the dome light at night when running the engine. Tie a colored cloth, preferably red, to your antenna or door. After snow stops falling, raise the hood to indicate you need help.

Exercise: From time to time, move arms, legs, fingers and toes vigorously to keep blood circulating and to keep warm.

INSIDE

Stay Inside: When using alternate heat from a fireplace, wood stove, space heater, etc., use fire safeguards and properly ventilate.

No Heat: Close off unneeded rooms, cover windows at night, eat and drink plenty - food provides the body with energy for producing its own heat. Keep the body replenished with fluids to prevent dehydration. Wear layers of loose-fitting, lightweight, warm clothing. Remove layers to avoid overheating, perspiration and subsequent chill.



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Severe Winter Weather

AVALANCHE SAFETY



- Never travel alone in avalanche terrain - always have a partner!
- Limit your exposure
- Match your terrain choice and travel plan to the conditions
- Carry and know how to use: Avalanche beacon/transceiver, shove, probe and do an equipment check with all partners
- Check the local avalanche advisory, observe the weather and look for recent avalanche activity
- Continually assess and discuss the snowpack as you travel